

IN THE CLAIMS:

1. (Previously Presented) A silicone-based adhesive sheet comprising a first layer and a second layer disposed adjacent to and in contact with said first layer; wherein said first layer comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

said second layer comprises

(II) a slower curing hydrosilylation-curable silicone composition different than said hydrosilylation-curable silicone composition (I) of said first layer, said slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and

wherein at least one of said hydrosilylation-curable silicone compositions (I) and (II) further comprises (F) a curing inhibitor; and

wherein said slower curing hydrosilylation-curable silicone composition (II) of said second layer has a curing time at least five times greater than said hydrosilylation-curable silicone composition (I) of said first layer based on the 90% vulcanizing times of said first and second layers at 130°C as specified by JIS K 6300.

2. (Previously Presented) The silicone-based adhesive sheet of Claim 1, wherein either of said hydrosilylation-curable silicone compositions (I) and (II) has a plasticity number of from 100 to 800 as specified by JIS K 6249.

3-4. (Cancelled)

5. (Previously Presented) The silicone-based adhesive sheet of Claim 1, further comprising a protective film disposed on at least one side of said silicone-based adhesive sheet and in contact with at least one of said first and second layers.

6. (Previously Presented) The silicone-based adhesive sheet of Claim 1, wherein at least one of said first and second layers is cured.

7-10. (Cancelled)

11. (Currently Amended) A method of bonding a semiconductor chip to a chip attachment component, said method comprising the steps of:

- (1) producing the semiconductor chip by dicing a laminated body comprising
 - a cured silicone layer bonded to a wafer and formed by curing a first layer,
 - a layer of curable silicone composition adjacent and firmly bonded to the said cured silicone layer,
 - a protective film firmly bonded to the said layer of curable silicone composition, and
 - a sheet adhesively attached to the said protective film; wherein the first layer comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

the layer of curable silicone composition comprises

(II) a slower curing hydrosilylation-curable silicone composition different than the hydrosilylation-curable silicone composition (I) of the first layer, the slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and

wherein at least one of the hydrosilylation-curable silicone compositions (I) and (II) further comprises (F) a curing inhibitor; and

wherein the slower curing hydrosilylation-curable silicone composition (II) of the layer of curable silicone composition has a curing time at least five times greater than the hydrosilylation-curable silicone composition (I) of the first layer based on the 90% vulcanizing times of the first layer and the layer of curable silicone composition at 130°C as specified by JIS K 6300;

(2) peeling the said protective film and the said sheet from the said semiconductor chip;

(3) bonding the said semiconductor chip to the said chip attachment component by pressing the said semiconductor chip to the said chip attachment component via the said layer of curable silicone composition; and

(4) curing the said layer of curable silicone composition.

12. (Currently Amended) The method of Claim 11, wherein the cured silicone layer and the layer of curable silicone composition firmly bonded to the cured silicone layer are formed by

applying [[a]] the first layer of the hydrosilylation-curable a—curable silicone composition (I) to the wafer,

applying a second layer of the slower curing hydrosilylation-curable a—curable-silicone composition (II) to the first layer, the second layer endowed with a lower curing rate than the first layer, and

curing the first layer to form the cured silicone layer, such that the second layer of the slower curing hydrosilylation-curable silicone composition (II) is prevented from being cured.

13. (Currently Amended) The method of Claim 12, wherein either of the said hydrosilylation-curable silicone compositions (I) and (II) has a plasticity number of from 100 to 800[[,]] as specified by JIS K 6249.

14-15. (Cancelled)

16. (Currently Amended) A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, ~~wherein said~~ [[the]] method comprises comprising the steps of:

a) fabricating the silicone-based adhesive sheet comprising a first layer and a second layer disposed adjacent to and in contact with the first layer; wherein the first layer comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

the second layer comprises

(II) a slower curing hydrosilylation-curable silicone composition different than the hydrosilylation-curable silicone composition (I) of the first layer, the slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and
wherein at least one of the hydrosilylation-curable silicone compositions (I) and (II) further
comprises (F) a curing inhibitor; and
wherein the slower curing hydrosilylation-curable silicone composition (II) of the second
layer has a curing time at least five times greater than the hydrosilylation-curable silicone
composition (I) of the first layer based on the 90% vulcanizing times of the first and second
layers at 130°C as specified by JIS K 6300 ~~having a first layer of curable silicone~~
~~composition (I) and a second layer disposed adjacent to and in contact with said first layer,~~
~~said second layer comprising a slower curing curable silicone composition (II) than said first~~
~~layer of composition (I), and; and~~

b) curing ~~the said~~ first layer of the hydrosilylation-curable silicone composition (I)
so that ~~the said~~ second layer of the slower curing hydrosilylation-curable silicone composition
(II) remains uncured while ~~the said~~ first layer of the hydrosilylation-curable silicone
composition (I) is kept in contact with the semiconductor chip, and ~~the said~~ second layer of the
slower curing hydrosilylation-curable silicone composition (II) is subsequently cured while kept
in contact with the semiconductor chip attachment component.

17. (Currently Amended) A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein said [[the]] method comprises:

a) fabricating the silicone-based adhesive sheet comprising a first layer and a second layer disposed adjacent to and in contact with the first layer; wherein the first layer comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

the second layer comprises

(II) a slower curing hydrosilylation-curable silicone composition different than the hydrosilylation-curable silicone composition (I) of the first layer, the slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and
wherein at least one of the hydrosilylation-curable silicone compositions (I) and (II) further
comprises (F) a curing inhibitor; and
wherein the slower curing hydrosilylation-curable silicone composition (II) of the second layer
has a curing time at least five times greater than the hydrosilylation-curable silicone
composition (I) of the first layer based on the 90% vulcanizing times of the first and second
layers at 130°C as specified by JIS K 6300 ~~having a first layer of curable silicone composition~~
~~(I) and a second layer disposed adjacent to and in contact with said first layer, said second layer~~
~~comprising a slower curing curable silicone composition (II) than said first layer of composition~~
~~(I), and; and~~

b) curing ~~the said~~ first layer of the hydrosilylation-curable silicone composition (I) so that ~~the said~~ second layer of the slower curing hydrosilylation-curable silicone composition (II) remains uncured while ~~the said~~ first layer of the hydrosilylation-curable silicone composition (I) is kept in contact with the semiconductor chip attachment component, and ~~the said~~ second layer of the slower curing hydrosilylation-curable silicone composition (II) is subsequently cured while kept in contact with the semiconductor chip.

18. (Currently Amended) The method of Claim 17, wherein either of the said hydrosilylation-curable silicone compositions (I) and (II) has a plasticity number of from 100 to 800[[,]] as specified by JIS K 6249.

19-20. (Cancelled)

21. (Currently Amended) A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the silicone-based adhesive sheet comprises a cured silicone layer formed by curing a first layer and further comprises a layer of curable silicone composition disposed adjacent to and in contact with the cured silicone layer; wherein the first layer of the silicone-based adhesive sheet comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

the layer of curable silicone composition of the silicone-based adhesive sheet comprises

(II) a slower curing hydrosilylation-curable silicone composition different than the hydrosilylation-curable silicone composition (I) of the first layer, the slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and
wherein at least one of the hydrosilylation-curable silicone compositions (I) and (II) further
comprises (F) a curing inhibitor; and
wherein the slower curing hydrosilylation-curable silicone composition (II) of the layer of
curable silicone composition has a curing time at least five times greater than the
hydrosilylation-curable silicone composition (I) of the first layer based on the 90% vulcanizing
times of the first layer and the layer of curable silicone composition at 130°C as specified by JIS
K 6300 a cured silicone layer and a layer of curable silicone composition disposed adjacent to
and in contact with said cured silicone layer; wherein said [[the]] method comprises comprising
the steps of:

a) bonding the said cured silicone layer so that the layer of curable silicone composition remains uncured while the said cured silicone layer is kept in contact with [[a]] the semiconductor chip, and subsequently

b) curing the said layer of curable silicone composition while the said layer of curable silicone composition is kept in contact with [[a]] the semiconductor chip attachment component.

22. (Currently Amended) A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the silicone-based adhesive sheet comprises a cured silicone layer formed by curing a first layer and further comprises a layer of curable silicone composition disposed adjacent to and in contact with the cured silicone layer; wherein the first layer of the silicone-based adhesive sheet comprises

(I) a hydrosilylation-curable silicone composition comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst;

the layer of curable silicone composition of the silicone-based adhesive sheet comprises

(II) a slower curing hydrosilylation-curable silicone composition different than the hydrosilylation-curable silicone composition (I) of the cured silicone layer, the slower curing hydrosilylation-curable silicone composition (II) comprising

(A) an organopolysiloxane having at least two alkenyl groups per molecule,

(B) a filler,

(C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule,

(D) an adhesion promoter, and

(E) a hydrosilylation catalyst; and
wherein at least one of the hydrosilylation-curable silicone compositions (I) and (II) further
comprises (F) a curing inhibitor; and
wherein the slower curing hydrosilylation-curable silicone composition (II) of the layer of
curable silicone composition has a curing time at least five times greater than the
hydrosilylation-curable silicone composition (I) of the first layer based on the 90% vulcanizing
times of the first layer and the layer of curable silicone composition at 130°C as specified by JIS
K 6300 a cured silicone layer and a layer of curable silicone composition disposed adjacent to
and in contact with said cured silicone layer; wherein said [[the]] method comprises comprising
the steps of:

a) bonding the said cured silicone layer so that the layer of curable silicone composition remains uncured while the said cured silicone layer is kept in contact with the semiconductor chip attachment component, and subsequently

b) curing the said layer of curable silicone composition while the said layer of curable silicone composition is kept in contact with the said semiconductor chip.

23. (Currently Amended) The method of Claim 22, wherein the said curable silicone composition has a plasticity number of from 100 to 800[[,]] as specified by JIS K 6249.

24-25. (Cancelled)

26. (Currently Amended) A semiconductor device prepared by the method of Claim

11.

27. (Currently Amended) The method of Claim 16, wherein either of the said hydrosilylation-curable silicone compositions (I) and (II) has a plasticity number of from 100 to 800[[.]] as specified by JIS K 6249.

28. (Cancelled)

29. (Currently Amended) The method of Claim 21, wherein the said curable silicone composition has a plasticity number of from 100 to 800[[.]] as specified by JIS K 6249.

30. (Cancelled)

31. (Previously Presented) A semiconductor device prepared by the method of Claim 16.

32. (Previously Presented) A semiconductor device prepared by the method of Claim 17.

33. (Previously Presented) A semiconductor device prepared by the method of Claim 21.

34. (Previously Presented) A semiconductor device prepared by the method of Claim 22.

35. (Cancelled)

36. (Previously Presented) A silicone-based adhesive sheet as set forth in claim 1 wherein both of said layers include said curing inhibitor (F), and said curing inhibitor (F) of said hydrosilylation-curable silicone composition (I) of said first layer is present in an amount different than an amount of said curing inhibitor (F) present in said slower curing hydrosilylation-curable silicone composition (II) of said second layer.

37. (Previously Presented) A silicone-based adhesive sheet as set forth in claim 1 wherein both of said layers include said curing inhibitor (F), and said curing inhibitor (F) of said hydrosilylation-curable silicone composition (I) of said first layer is of a different type than said curing inhibitor (F) of said slower curing hydrosilylation-curable silicone composition (II) of said second layer, for adjusting curing speed of said layers.

38. (Previously Presented) A silicone-based adhesive sheet as set forth in claim 1 wherein said slower curing hydrosilylation-curable silicone composition (II) of said second layer has a curing time at least 10 times greater than said hydrosilylation-curable silicone composition (I) of said first layer based on the 90% vulcanizing times of said first and second layers at 130°C as specified by JIS K 6300.